WIRELESS HUMAN INPUT DEVICE

FIELD OF THE INVENTION

[0001] The present invention is related to wireless human input device, and especially to a wireless human input device using different leading signals to prevent data interference.

BACKGROUND OF THE INVENTION

[0002] U.S. patent No. 5,854,621 titled "WIRELESS MOUSE" discloses a communication system used to receive signals representing displacement action of a peripheral device, the communication system includes a first peripheral device and a receiving unit; wherein the first peripheral device must have a first nonvolatile memory device to store a first identifier, and the receiving unit has a second nonvolatile memory device to store the first identifier and authorized identifiers of other peripheral devices. The U.S. patent No. 5,854,621 can solve the problems of data interference in data transmission and receiving between the peripheral devices and receiving units, however, the peripheral devices for transmitting data must use nonvolatile memory devices to permanently store the identifiers. Due to U.S Patent No. 5854,621 using the components of the nonvolatile memory devices, it causes increase of production cost and this is deficiency thereof.

[0003] In view of above defect and deficiency involved in the prior art, the inventor of the present invention develops a wireless human input device that can overcome the problems of data interference even without the memory device.

SUMMARY OF THE INVENTION

[0004] The present invention provides a wireless human input device, which allows a plurality of wireless human transmitting units to commonly share a wireless

human receiving unit under a working frequency, can overcome data interference as well so that the wireless human receiving unit can smoothly receive and identify data transmitted from the wireless human transmitting unit.

[0005] Therefore, in order to get the abovementioned object, the wireless human input device of the present invention comprise: a plurality of wireless human transmitting units and a wireless human receiving unit. The wireless human transmitting units are used for generating different leading signals and data signals sand transmitting the leading signals and the data signals to the wireless human receiving unit. The wireless human receiving unit is used for identifying each of the data signals being corresponding to which leading signal.

[0006] These objects and other objects and advantages of the present invention will become more apparent upon reading of the following detailed description and the accompanying drawings in which:

BRIEF DESCRIPTION OF THE DRAWINGS

[0007] Fig. 1 is a diagram showing application of the present invention;

Fig. 2 is a schematic view showing the hardware structure of a wireless human transmitting unit of the present invention;

Fig. 3 is a schematic view showing the hardware structure of a wireless human receiving unit of the present invention;

Fig. 4 is a schematic view showing the signals transmitted from a wireless human transmitting unit of the present invention;

Fig. 5 is a waveform diagram of a leading signal used for a wireless mouse transmitting unit of the present invention; and

Fig. 6 is a waveform diagram of a used for a wireless keyboard

transmitting unit of the present invention.

DETAILED DESCRIPTION OF THE INVENTION

[0008] Fig. 1 is a diagram showing application of the present invention; wherein a wireless human input device 10 of the present invention mainly is composed of a plurality of wireless human transmitting units 11 and a wireless human receiving unit 13. The wireless human receiving units 11 include a wireless keyboard transmitting unit 11A, a wireless mouse transmitting unit 11B, a wireless touch pad transmitting unit 11C and etc. These wireless human transmitting units 11 use the same frequency to transmit data to the wireless human receiving unit 13 commonly. The common wireless human receiving unit 13 receives data emitted from the wireless human transmitting units 11 and the data can be identified respectively. Further, the wireless human receiving unit 13 clearly knows the data from which of these wireless human transmitting units 11. Then, the data is sent to a corresponding driver in a computer 20 for further accessing.

[0009] Fig. 2 is a schematic view showing the hardware structure of a wireless human transmitting unit of the present invention; Fig. 3 is a schematic view showing the hardware structure of a wireless human receiving unit of the present invention and Fig. 4 is a schematic view showing the signals transmitted from a wireless human transmitting unit of the present invention. The wireless human transmitting units 11 are mainly used to generate leading signals 111 and data signals 113, and the signals 111, 113 are sent to the wireless human receiving unit 13. The most important feature of the present invention is that the wireless human receiving units 13 can identify different corresponding wireless human transmitting units 11 by way of different leading signals 111. The waveform diagram shown in Fig. 5 is leading signal 111 generated by the wireless mouse transmitting unit and the waveform

diagram shown in Fig. 6 is leading signal 1113 generated by the wireless keyboard transmitting unit. The leading signal 1111 includes a waveform signal 1111A with a wavelength of 300 μS, while the leading signal 1113 includes a waveform signal 1113A with a wave length of 700 μS. Hence, in an aspect to the whole, the leading signal 1111 used on the wireless mouse transmitting unit 11B and the leading signal 1113 used on the wireless keyboard transmitting unit 11A are totally different. Once the common wireless human receiving unit 13 receives a data packet containing the leading signal 1111 and another data packet containing the leading signal 1113, the wireless human receiving unit 13 can distinguish the two data packets according to the difference between the waveform signal 1111A and the waveform signal 1113A, namely, the wireless human receiving unit 13 can recognize data signal 1131 transmitted by the wireless mouse transmitting unit 11B and data signal 1133 transmitted by the wireless keyboard transmitting unit 11A.

[0010] The leading signals 111 used in the wireless human transmitting units 11 of the present invention are generated from a first electronic circuit device 110 and the first electronic circuit device 110 can be a timer 110 of a micro controller in practice. The timer in the micro controller is set with different time parameters to generate the preceding waveform signal 1111A with a waveform length of 300 μS and the waveform signal 1113A with a waveform length of 700 μS.

[0011] A second electronic circuit device 130 of the wireless human receiving unit 13 of the present invention can identify different leading signals 1111 and 1113 and the second electronic circuit device 130 can be a charging and discharging circuit, which contains capacitors and electronic components, for being able to have time parameters in practice. The second electronic circuit device 130 outputs low or high level signals 130A according to the waveform signal 1111A and the waveform

signal 1113A. For instance, a low level signal 130A can be output based on the waveform signal 1111A of 300 μS, and a high level signal 130A can be output based on the waveform signal 1113A of 700 μS.

[0012] The preceding data signals 113 are mainly used to carry the data transmitted from the wireless human transmitting units 11 to the wireless human receiving unit 13. Taking the wireless mouse as an example, the data signal 1131 of the wireless mouse transmitting unit 11B contains coordinate displacement data of a cursor, the data of clicking or releasing the left key, the right key or the middle key, the data of rolling the roller and etc. Taking a wireless keyboard as an example, the data signal 1133 of the wireless keyboard transmitting unit 11A contains the data of scan codes for one of the keys on the keyboard.

[0013] By the fact that the present invention renders the wireless human transmitting units 11 to generate leading signals 111 by themselves for the units 11 being able to be identified, thereby there is completely no need to pack any identifier in the transmitting data packet. Hence, neither the wireless human transmitting units 11 nor the wireless human receiving unit 13 of the present invention needs additional memory components (such as EEPROM memory components) to store such an identifier. Accordingly, the present invention can simultaneously save I/O pins of the additional memory elements and have the efficiency of its related electronic elements improved evidently.

[0014] The scope of the present invention is shown by the attached claims rather than the embodiment. Various modifications made within the meaning of an equivalent of the claims of the invention and within the claims are to be regarded to be in the scope of the present invention.